

WHAT IS CLAIMED IS:

1. An effervescent composition comprising:
 - (a) a bisphosphonate,
 - (b) an acid component, and
 - (c) an alkaline effervescing component,

wherein the composition when dissolved in water produces a solution having a buffered pH of about 3 to about 6.5.

2. The effervescent composition of claim 1, further comprising an anti-ulcer agent.
3. The composition of claim 2, wherein the anti-ulcer agent is an H₂-antagonist.
4. The composition of claim 3, wherein the H₂-antagonist is present in an amount of from about 3.3% to about 57.5% by weight of the composition.
5. The composition of claim 3, wherein the H₂-antagonist is selected from the group consisting of ranitidine, cimetidine, famotidine, nizatidine, and combinations thereof.
6. The composition of claim 2, wherein the anti-ulcer agent is a proton pump inhibitor.
7. The composition of claim 6, wherein the proton pump inhibitor is present in an amount of from about 0.5% to about 60% by weight of the composition.
8. The composition of claim 6, wherein the proton pump inhibitor is selected from the group consisting of omeprazole, pantoprazole, lansoprazole, rabeprazole, and combinations thereof.
9. The composition of claim 2, wherein the anti-ulcer agent comprises at least one H₂-antagonist and at least one proton pump inhibitor.

10. The composition of claim 1, wherein the bisphosphonate is present in an amount of from about 0.25% to about 33.3% by weight of the composition.

11. The composition of claim 1, wherein the bisphosphonate is selected from the group consisting of etidronate, risedronate, alendronate, and combinations thereof.

12. The composition of claim 1, wherein the bisphosphonate is etidronate.

13. The composition of claim 1, further comprising a sweetener or flavorant.

14. The composition of claim 1, wherein the dissolved buffered solution is capable of mediating the pH of a patient's stomach for at least about 15 minutes or more.

15. The composition of claim 1, wherein the acid component is present in an amount of from about 15% to about 60% by weight of the composition.

16. The composition of claim 1, wherein the acid component is selected from the group consisting of citric acid, tartaric acid, malic acid, fumaric acid, adipic acid, succinic acid, acid anhydrides, acid salts, mixtures of acid salts, acid salts of disodium dihydrogen pyrophosphate, acid citrate salts and other related organic acids and their salts, and combinations thereof.

17. The composition of claim 1, wherein the alkaline effervescing component is present in an amount of from about 20% to about 70% by weight of the composition.

18. The composition of claim 1, wherein the alkaline effervescing component is selected from the group consisting of carbonate salts, sodium bicarbonate, sodium carbonate anhydrous, potassium carbonate, and potassium bicarbonate, sodium glycine carbonate, calcium carbonate, calcium bicarbonate, lysine carbonate, arginine carbonate, and combinations thereof.

19. The composition of claim 1, wherein the composition is in the form of a tablet.
20. The composition of claim 19, wherein the tablet has a weight of about 1500 mg or more.
21. The composition of claim 1, wherein the acid component and the alkaline effervescing component are at least partially reacted with each other during granulation with the bisphosphonate.
22. The composition of claim 2, wherein the acid component and the alkaline effervescing component are at least partially reacted with each other during granulation with the bisphosphonate and/or the anti-ulcer agent.
23. The composition of claim 1, further comprising a solubilizing agent.
24. The composition of claim 23, wherein the solubilizing agent is selected from the group consisting of polyvinylpyrrolidones, polyethylene glycols, dextrans, and combinations thereof.
25. The composition of claim 1, wherein the acid component comprises a non-zero amount of acid equivalents and the solution comprises an amount of a fully deprotonated salt of the acid component that is at least about 1.5 times the amount of acid equivalents.
26. An effervescent composition comprising:
- (a) a bisphosphonate,
 - (b) an anti-ulcer agent,
 - (c) an acid component,
 - (d) an alkaline effervescing component, and, optionally, one or more of the following ingredients selected from:
 - (e) a sweetener,

- (f) a flavorant, and
- (g) a solubilizing agent.

27. The effervescent composition of claim 26, wherein the acid component and the alkaline effervescing component are at least partially reacted with each other during granulation with the bisphosphonate and/or the anti-ulcer agent.

28. The composition of claim 26, wherein the effervescent composition comprises:

- (a) about 3% to about 19% bisphosphonate,
- (b) about 0.5% to about 50% anti-ulcer agent,
- (c) about 20% to about 60% acid component
- (d) about 15% to about 50% alkaline effervescing component,
- (e) about 0% to about 5% sweetener,
- (f) about 0% to about 10% flavorant, and
- (g) about 0% to about 10% solubilizing agent,

wherein the percent amounts are based on the total weight of the composition.

29. The composition of claim 28, wherein the bisphosphonate is etidronate.

30. An effervescent composition comprising:

- (a) a microencapsulated bisphosphonate,
- (b) an acid component,
- (c) an alkaline effervescing component, and optionally
- (d) an anti-ulcer agent.

31. The effervescent composition of claim 30, wherein the bisphosphonate is microencapsulated in a cellulosic, gum, or wax coating.

32. A method of treating osteoporosis in a mammal comprising:

- (a) combining an osteoporosis-treating effective amount of the composition of claim 1 with water to form at least a partial solution; and

- (b) administering the solution to the mammal orally.

33. The method of claim 32, wherein the pH of the mammal's stomach is raised to about 3 upon passage of the solution thereinto.

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- 34 ~~33~~. A method of inhibiting bone resorption in a mammal comprising:
- (a) combining a bone resorption inhibiting amount of the composition of claim 1 with water to form at least a partial solution, and
 - (b) administering the solution to the mammal orally.

35 ~~34~~. The method of claim ~~33~~ ³⁴, wherein the pH of the mammal's stomach is raised to about 3 or greater upon passage of the solution thereinto.

- 36 ~~35~~. A method of treating osteoporosis in a mammal comprising:
- (a) combining an osteoporosis-treating effective amount of the composition of claim 26 with water to form at least a partial solution; and
 - (b) administering the solution to the mammal orally.

37 ~~36~~. The method of claim ~~35~~ ³⁶, wherein the pH of the mammal's stomach is raised to about 3 or greater upon passage of the solution thereinto.

- 38 ~~37~~. A method of inhibiting bone resorption in a mammal comprising:
- (a) combining a bone resorption inhibiting amount of the composition of claim 26 with water to form at least a partial solution, and
 - (b) administering the solution to the mammal orally.

39 ~~38~~. The method of claim ~~37~~ ³⁸, wherein the pH of the mammal's stomach is raised to about 3 upon passage of the solution thereinto.

- 40 ~~39~~. A method of treating osteoporosis in a mammal comprising:
- (a) combining an osteoporosis-treating effective amount of the composition of claim 30 with water to form at least a partial solution; and

- (b) administering the solution to the mammal orally.

41 ~~40~~⁴⁰. The method of claim ~~39~~⁴⁰, wherein the pH of the mammal's stomach is raised to about 3 or greater upon passage of the solution thereinto.

42 ~~41~~. A method of inhibiting bone resorption in a mammal comprising:

- (a) combining a bone resorption inhibiting amount of the composition of claim 30 with water to form at least a partial solution, and
- (b) administering the solution to the mammal orally.

43 42. The method of claim 41⁴², wherein the pH of the mammal's stomach is raised to about 3 upon passage of the solution thereinto.